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ABSTRACT

This issue of a quarterly newsletter focuses on the theme of critical thinking skills. "Critical Thinking Skills: An Interview with Dr. Richard Paul" (Barbara Christopher) is the text of an interview in which the director of research at Sonoma State University's Center for Critical Thinking examines the meaning of critical thinking and the ways adult educators can incorporate it into their own and their students' everyday lives. "Using Charts as Thinking Tools" (Debbie Guerra) outlines a learning activity incorporating critical thinking, spreadsheets, and charts that literacy practitioners can use to help adult learners learn to transfer classroom learning into daily life. "Helping Students Ask the Right Questions" (Diane Della Croce) suggests techniques for using the Socratic method of teaching with students in postsecondary-level and adult education classes. Strategies for developing adult basic education (ABE) students learn the basic thinking skills that are prerequisite to higher-order thinking skills are offered in "Integrating Critical Thinking Skills into ABE Curriculum" (Elizabeth Odom). "Bloom's Taxonomy of Six Cognitive Levels" characterizes six levels of cognitive skills: knowledge; comprehension; application; analysis; synthesis; and evaluation. "Face to Face in a Nightmare: Critical Thinking and Reclaiming" (Cynthia Blodgett-McDeavitt) deals with how highly educated women learn to relearn after a "cognitive event." (MN)

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WORD'S WORTH

A Quarterly Newsletter of the Lifelong Learning Network

Fall 1998

Critical Thinking Skills: An Interview with Dr. Richard Paul

by Barbara Christopher

Dr. Richard Paul is the Director of Research at The Center for Critical Thinking at Sonoma State University in Rohnert Park, California. He has written 6 books and close to 200 articles on the subject. The Center for Critical Thinking conducts workshops, conferences, advanced research and disseminates information about the theory and practice of critical thinking. On September 1, 1998, I had the pleasure of interviewing Dr. Paul on the meaning of critical thinking and how we can incorporate critical thinking into our lives and the lives of our students.

Q: Dr. Paul, could we begin this interview with a working definition of critical thinking?

RP: The first premise to begin with is that we as humans are by nature thinkers. Virtually everything we do is guided by our thinking. If there are tendencies which are built into the human mind to think poorly, then these tendencies will spill over into much of our behavior, action and decision making, thereby, lowering the quality of that action or decision making. Critical thinking occurs as people recognize that thinking itself does not necessarily gravitate toward high quality. Rather, it often gravitates toward low quality. So then critical thinking is the systematic attempt to think about thinking in such a way as to take it apart and recognize how it is functioning, evaluate it for its strengths and weaknesses, and restructure it to make it better. In other words, it's thinking about thinking while thinking in order to make thinking better: thinking improving thinking.

Q: What are some traits of a good critical thinker?

RP: Intellectual humility would be one. This trait implies that you know when you know and when you don't know. You have knowledge of your ignorance. You can understand this best by considering its opposite, intellectual arrogance. You see in many humans the tendency to believe they know things of which, in fact, they are ignorant. Prejudice is a form of intellectual arrogance. After a few experiences a person may generalize beyond his or her experiences and begin stereotyping, thinking that he or she knows a group of people which they, in fact, have only a very little information about. A person with intellectual humility would know what they know and know what they don't know and are able to fill in the gaps of ignorance with knowledge rather than to confuse a belief, however passionate it might be, with knowledge. Another trait of a good critical thinker would be intellectual perservance, the

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From the Project Director

by Elizabeth Bryant McCrary

(Elizabeth "Beth" Bryant McCrary is Project Director for the Lifelong Learning Network and the Information Technology Training Program at Georgia Tech.)

As you receive this issue of *Word's Worth*, the Lifelong Learning Network (LLN) is rolling out the *Road Scholar* on it's maiden swing around the state. The *Road Scholar*, LLN's mobile computer training lab, began its 10 city tour on September 14, 1998. The 36-foot Airstream interior was designed by Danny Corkran at the Center for Rehabilitation Technology to contain eight student computer workstations and one teacher station. The unit was created to assist Georgia's literacy practitioners in the use and integration of computer technology.

The *Road Scholar* curriculum for '98-99 is made up of five one-day courses: Classroom Record Keeping (database), SDA Record Keeping (administrative database), Desktop Publishing, Hardware Operation/Troubleshooting/Upgrades, and Software Applications as Teaching Tools. The Classroom Record Keeping course is being offered on the initial statewide swing. The courses are taught twice per site before the unit moves on to the next location.

During the year, the *Road Scholar* will circle Georgia three times remaining in each of the 10 cities for one week. The cities currently hosting the *Road Scholar* are Rome, Gainesville, Augusta, Swainsboro, Columbus, Warner Robins, Albany, Hinesville, Valdosta, and Atlanta. The first training swing will be completed by November 19, 1998.

I proudly introduce the *Road Scholar* team: Elizabeth Dillon-Black (curriculum developer/ manager), Sherri McElroy Clark (instructor), and Fitzpatrick Reid (driver). You will hear more from the *Road Scholar* team in the Winter '99 issue of *Word's Worth* as we share our road trip experiences and feedback.

Beth Bryant McCrary

LIFELONG LEARNING
N · E · T · W · O · R · K

The Lifelong Learning Network (LLN) is a collaborative effort between the College of Architecture's Center for Rehabilitation Technology at Georgia Institute of Technology, the Georgia Department of Technical and Adult Education, and Literacy Action, Inc. LLN's objectives are to:

- Provide staff development training courses that promote greater computer literacy and fuller integration of computer technology in the ABE classroom.
- Develop a series of videotaped supplements for literacy instruction.
- Design and produce CD-ROM tools to supplement the videotaped series.
- Execute research to determine the benefits of video supplements and computer technology in the advancement of literacy instruction.
- Open an avenue for exchanging ideas between ABE practitioners, researchers and policy makers.

Staff:
Beth Bryant McCrary, *Project Director*
Liz Dillon Black, *Research Associate*
Barbara Christopher, *Admin. Coordinator*
Sherri McElroy Clark, *Road Scholar Instructor*
Bill Curtis, *Multimedia Developer*
Mark Johnson, *Research Associate*
Arthur Murphy, *Research Scientist*
Fitzpatrick Reid, *Road Scholar Driver*
Ron Rucker, *Project Coordinator*
Patty Wood, *Writer/Producer*

For more information on the Lifelong Learning Network call (800) 428-7323 or visit our website at http://www.arch.gatech.edu/crt/learning.htm

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Using Charts as Thinking Tools

by Debbie Guerra

(Debbie Guerra is a Literacy Technology Consultant and former ABE (Adult Basic Education) Teacher and Program Coordinator at the Brooklyn Public Library Literacy Program in New York. Debbie suggested the following lesson in response to a practitioner's request for an adult literacy activity incorporating critical thinking, spreadsheets and charts.)

Technology is an excellent vehicle for promoting active learning among students, introducing them to basic concepts of critical thinking and information literacy while they learn essential workforce computing tools.

Most instructors use newspaper or magazine articles regularly in their classrooms as a springboard for developing reading, writing, thinking and discussion skills around issues of concern to students. Often, teachers approach articles through prepared questions and discussion leads. Students then work individually or in groups to explore the material by tackling the questions. Technology can extend this learning experience even further. Students can delve deeper into the exploration of information by creating charts using databases, spreadsheets or tables to compile, compare or contrast the information.

The following sample activity assumes that students have read and briefly discussed article(s) concerning candidates running for mayor or other political positions. It is important that students work in groups to complete this activity, both to share information and to help each other learn to use a new technology tool. This activity should take place in at least two sessions so that students have sufficient time to explore the information and the software. Teachers can get a lot of mileage out of making a chart; don't limit it to one session.

First Session

1. Ask learners to bring articles to class. Once organized into groups at the computer, tell students that they are going to construct a chart that compares the candidates running for mayor based on issues of concern.
2. Take time to familiarize students with the software - database, spreadsheet or tables. First, show them hard copy examples of comparison charts in newspapers or materials they are reading so they become familiar with charts. It may be helpful to brainstorm charts that they have learned to use in their lives, such as train schedules or nutritional information on food packaging.
3. Next, demonstrate the database or other tool you will use to create the chart by making one yourself on screen and showing students how it's done. Keep this lesson very simple and basic; students actually learn best how to make charts by doing it themselves. Be sure to demonstrate how to format, enlarge and move columns, change fonts or add grid lines. Again, you are only showing them the tools at their fingertips. Real learning will occur when they use these tools on their own.
4. Next, ask students to plan and design their charts, deciding on the issues they want to compare, such as education, homelessness, crime. Next, students set up and label the fields across the top that will contain the specific information. Then place the names of the mayoral candidates in rows beneath the fields, completing an empty chart now ready to fill with information.
5. Working in groups, the students reread and discuss articles, pulling out data to place in the columns next to each candidate. Discussion will involve finding information and summarizing it in columns. At this point students will also begin to change column size or move columns around and should be encouraged to experiment and custom-build their charts.

Second Session

6. Students continue to put data in the chart.
7. When the charts are finished on the computers, ask students to cut and paste them into a word processing document, write a summary of their findings, and finally, print a copy of their work.

By the end of this activity students will have actively used many thinking skills as they planned, designed and created their own chart.

(This article has been reprinted with permission from the Literacy Assistance Center in New York and the Literacy Update Vol. 7, No. 3 November/ December 1997 edition.)

CONSIDER REGULARLY DISCUSSING WITH YOUR STUDENTS HOW AND WHETHER THEY ARE ABLE TO TRANSFER THE IDEAS THEY ARE LEARNING IN CLASS TO THINKING IN THEIR EVERYDAY LIVES.

Helping Students *Ask the Right Questions*

by Diane Della Croce

(Diane Della Croce, Ph.D. teaches Critical Reading and Writing, Literature and Research at Adelphi University.)

One of the most challenging tasks for me as a teacher is to get students to think critically. What do I mean when I tell students I want them to think critically? And, more importantly, how do my students interpret this directive? Students will argue that they do indeed think, and they are quite right. But as we begin to explore the possible definitions and implications of critical thinking, we usually arrive at the conflict between opinion and evaluation.

In the many years I have taught both traditional freshmen entering college directly from high school and adult learners, I have found this conflict a most productive site for exploring student resistance to questioning their preconceived ideas and beliefs based on untested assumptions. The basis of our exploration, of establishing a few grounded approaches to critical thinking, is questions. While this is not a new approach, the Socratic method of teaching has a long and proven history; nevertheless, the problem of convincing students that there are no "right answers" to many issues that underline their personal and academic lives is a perennial one.

In my many attempts to teach critical thinking, I have found that a separate course focused on critical thinking - - more accurately a course in critical reading/writing/thinking - - is more productive than teaching these skills as part of a curriculum. When I have assumed that critical thinking skills are somehow woven into reading/writing/thinking about texts and experience, the content of the course seems to overshadow the process of understanding and making sense of these texts and experience.

While it is somewhat artificial to separate content from process, I have found that concentrating on the process involved in critical thinking helps students become aware of their own particular skills and how they make sense of texts and experience. Questioning texts and experience in a certain way, making students reflective about themselves as critical thinkers, is the first step toward teaching critical thinking as a mode, a way of approaching life within and outside of the classroom.

With this in mind, I have experimented with several texts on critical thinking for my Critical Reading and Writing course and have found *Asking the Right Questions: A Guide to Critical Thinking* by M. Neil Browne and Stuart M. Keeley, published by Prentice Hall, a useful central text for both traditional freshman and adult learners. It provides students with a concrete strategy - - a way to approach texts and experience with specific questions. To quote the authors, "it integrates cognitive and value dimensions - - a very important aspect of critical thinking and personal decision making." It is a concise text that asks students to excavate their own reading and writing, the two ways they make sense of the world. Questions focus on identifying and articulating issues, conclusions, and reasons; quality of evidence; value conflicts and assumptions; ambiguous words and phrases; fallacious reasoning; rival causes; validity of statistics; omitted significant information; and possible reasonable conclusions.

All of these concerns help students discern between uninformed opinion and evaluation that requires them to separate, analyze texts and experience and synthesize their exploration based on these questions. Their evaluation is their decision about the worth of what they are exploring. They are in effect a true critic, a *kritikos*, whose judgement is grounded in a thoughtful process.

For traditional freshmen, these questions present a challenge that increases in difficulty as they require more sophisticated levels of inquiry especially those concerning assumptions, value conflicts, and value preferences. I have found that for adult learners, this approach can be more productive since they usually have a greater range of experience, and have grappled with negotiating issues in their own lives. Applying these questions to texts they must read and decisions they must make in their daily lives gives the adult learner a practical approach to thoughtful evaluation. Although freshman are also engaged in these activities, the adult world of juggling work and school, child rearing, and economic pressure provides a more pragmatic, less theoretical arena to explore and exercise these skills.

Using a central text such as *Asking the Right Questions* provides a way to explore and critically read/write/think about literature, film, art and everyday life. In a Critical Reading and Writing course, students can bring in texts and experience from other courses so the curriculum can be somewhat fluid and more applicable to each student's needs. Especially now, when students are required to incorporate technology in the form of Internet research comprised of an overwhelming array of "bites" of information, students need a practical mode of evaluation.

Reading/writing/thinking critically is an arduous, sometimes disconcerting, but rewarding challenge that questions students' ideas, values, and assumptions that underline their behavior. Teaching critical thinking as the centerpiece of a curriculum demands that learners stop and pay attention - - take note of how they are negotiating texts and experience to make meaning, and why they have come to some evaluation either within or outside the classroom.

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Integrating Critical Thinking Skills into ABE Curriculum

by Elizabeth Odom

(Elizabeth Odom is a Curriculum and Program Specialist for Literacy Action, Inc. (LAI), a non-profit adult literacy provider in Atlanta, Ga. Currently, she is developing curriculum for the Learning for Life Video Series as well as serving on the Program Development Committee for LAI's program expansion.)

Frequently when practitioners address the subject of critical thinking, they speak of it only as a higher order thinking skill which cannot be addressed with their students until several levels of basic literacy have been mastered. It is true that analysis, synthesis and evaluation are high level critical thinking skills. (See Bloom's Taxonomy) However, it should also be noted that adult basic education learners, even at the lowest levels of literacy, find themselves utilizing critical thinking skills nearly everyday. Like their more literate counterparts, their lives require them to make important and complex decisions; for example, identifying and communicating accurately their sick child's symptoms to a pediatrician or making a decision about appropriate elder-care for an aging parent.

Literacy Action Inc., of Atlanta, is a private, non-profit adult literacy provider. Each year, we serve hundreds of students ranging in skill level from 0-PHS (post high school) in classroom settings. For many years, we have utilized a somewhat broader interpretation of critical thinking than that which is traditional. Foundational aspects of critical thinking such as making comparisons and categorizing are taught to even our lowest level students (0-2.9). Providing activities early in the curriculum in which students are to think critically not only sets the stage for academic success, but is also a great motivator and retention tool. Students can see directly how what they are learning in class impacts their "real" life - and they can begin to use these new skills right away.

In 1996, Dr. Daphne Greenberg of the Center for the Study of Adult Literacy at Georgia State University was commissioned by Literacy Action to review the strengths and weaknesses of our existing program and to make recommendations for its future direction. Her thorough evaluation included an analysis of our curriculum, literature review, and extensive interviews and observations with LAI staff, instructors, current and former students.

Following Dr. Greenberg's report, Literacy Action's President, Mattie Eley, appointed a Curriculum Development Committee consisting of three LAI staff members, to review and expand the LAI curriculum based on Dr. Greenberg's research. This committee analyzed her report, reviewed workforce and governmental changes which would affect our program (SCANS, DTAE, Welfare-to-Work competencies) and held additional discussions with LAI staff and students. The result was a revised and expanded "test" curriculum for Literacy Action Inc.

Recommendations for expanding LAI lesson content included additional critical thinking objectives for all levels to be met

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Bloom's Taxonomy of Six Cognitive Levels

Level 1: **Knowledge**
A starting point that includes both the acquisition of information and the ability to recall information when needed.

A. Classifying
B. Distinguishing opinion from fact
C. Giving definitions and examples
D. Outlining and summarizing

Level 2: **Comprehension**
The basic level of understanding. It involves the ability to know what is being communicated in order to make use of the information.

A. Making comparisons
B. Identifying structure
C. Ordering steps in a process
D. Reading charts and graphs
E. Recognizing meaning
F. Identifying main ideas
G. Identifying relationships

Level 3: **Application**
The ability to use a learned skill in a new situation.

A. Estimating
B. Anticipating probabilities
C. Making inferences
D. Applying math

Level 4: **Analysis**
The ability to break down information into its integral parts and to identify the relationship of each part of the total organization.

A. Judging completeness
B. Recognizing relevance & irrelevance
C. Identifying story elements
D. Judging sentence sequence
E. Recognizing fallacies

Level 5: **Synthesis**
The ability to combine existing elements in order to create something original.

A. Communicating ideas
B. Planning projects
C. Forming hypotheses
D. Drawing conclusions

Level 6: **Evaluation**
The ability to make a judgement about the value of something by using a standard.

A. Making generalizations
B. Developing criteria
C. Judging accuracy
D. Making decisions
E. Identifying values
F. Identifying the mood of a story

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Face to Face in a Nightmare: Critical Thinking and Reclaiming

by Cynthia Blodgett-McDeavitt

(Cynthia Blodgett-McDeavitt is a doctorall candidate in Communitys and Human Resources at the University of Nebraska-Lincoln. Her dissertation involves researching ways that highly educated women learn to relearn following a "cognitive event." She is currently working as an Instruction Design Specialist in the Research and Development unit of the Department of Distance Education at UNL (http://dlaws.unl.edu).)

It was a dark and stormy night - - it could have been, anyway. I don't remember what the day was like. I do know that I was happy. I don't remember that I was happy, but I know that I had constructed my life so that I was happy. I loved my job. I loved my husband and my family. My oldest child had just married. I had an active church life that brings much fulfillment with teaching and fellowship. As the critical thinking coordinator for a large teacher training technology grant, I was looking forward to a series of critical thinking inservices with three school districts. Right up my alley and very exciting! I was looking forward to upcoming conference presentations. I had just turned in my comprehensive exams for my Ph.D. and was planning my dissertation proposal. I was having weekly meetings with my girlfriends doing what I called "ritual chocolate" and enjoying girly fellowship. I was doing all of these things, and was happy.

That was my life that day, September 11, 1997. Living my life to the fullest. What a concept! But I got in the way of some electricity that was not where it was supposed to be, and that day my life as I knew it changed in an instant. "Acquired mild traumatic brain injury" - That's what the rehab specialists call my new little friend. Mild TBI. A term that I had not heard of before. Oh, I had attended LD workshops and had learned some of the issues and concerns of adult educators who suspected that a large proportion of their learners had undiagnosed learning disabilities. As Teacher Training Institute Coordinator for the Nebraska Institute for the Study of Adult Literacy for 3 years, I had tried to include information about teaching to all learning styles and modes in my inservices. I was not an LD specialist. I had never heard the term "brain injury" or "head trauma" in these discussions on LD in adult basic education.

That was then and this is now. I didn't lose the old knowledge. I did lose memory from the 3 weeks immediately prior to the accident. I don't remember the wedding. My day planner says that my daughter got married. I'm starting to regain bits and pieces, but I don't know if I am remembering or if I am constructing from the pictures. The most noticeable immediate loss was my ability to organize information and the loss of language function. The comps were done, thankfully, except for the one that I needed to re-write (I learned about later). I'm now ABD (all but dissertation) and qualified to do all sorts of things, but heaven help me if I still needed to do the exams! I'd be dead in the water, as they say in my native Minnesota.

What does all this have to do with critical thinking or literacy concerns? If I were to show up in a literacy program with my bundle of disorganization, math incompetence, and memory challenges, I would be unable to take the TABE or any other initial test. Letters dance and my eyes don't track properly. Unless I told you, how would you know that I am a Ph.D. candidate? How would you prepare me to succeed in any educational pursuits?

The primary message of this article is that my new cognitive status placed me firmly in the profile of the adult learner with learning difficulties. With my cognition on autopilot, information processing was scrambled, but certain structures, like the framework of a sturdy old barn, remained. Critical thinking and it's essential partner, reflective thinking, comprise that framework for me, and saved my intellect after my accident. I literally am rebuilding myself. My message to the entire literacy and larger adult ed field is from the perspective of a learner who knows what it is to struggle to remember and make sense. I struggle to learn. I struggle to read. Because I am in the learning business and knew about learning, the framework that serves as my autopilot led me to figure out that I require information to be presented to me in different modalities for me to learn. I believe that I have personally discovered the value of experiential education, as well as the value of teaching to multiple styles in the learning setting. Critical thinking is so innate in my daily being that it became the springboard that I used to facilitate recovery, to negotiate the health care system, to not become a victim of different systems, to regain my temporarily lost voice as an advocate for the adult learner.

First, a little background on the nature of the accident. Unlike a blow to the head, a car accident, or a fall, severe electrical shock wounded me by doing a sort of generalized blowing of my cognitive circuits. My higher order processing was blown out. My active brain that was used to talking to itself all the time and getting a lot of work done on its own was suddenly silent. This was very weird! Rather than having one set of symptoms that would result from a blow, my symptoms were diffuse. None were debilitating. But as one of my rehab care providers said, for a person such as myself who is used to "dancing in the top 5%," loss of higher order skills is a major, life-changing event. Even with my higher order processes offline, I was told that I was still functioning like the average person. With half of my vocabulary destroyed, what remained was still more than adequate for everyday living. Small comfort! My only job skill, as I perceive, is my ability to unpack complicated concepts and then bring others to new understandings. New industry standards for employees

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Face to Face in a Nightmare: Critical Thinking and Reclaiming

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throughout all levels of work require that employees be able to communicate effectively, to problem solve, and work cooperatively in teams. With these abilities challenged, I felt that my employment was at risk.

So, what is critical thinking? Why this circular conversation about critical thinking and my experience? I believed before, and still hold that critical thinking is crucial for literacy learners. We cannot afford the time to become experts before becoming critical thinkers. It is far too easy to be cheated, to be victimized, by those who count on people not being able to think through advertisements, contracts, campaign promises, medical advice...the list goes on. Possibilities for exploitation are endless. And who pays? The individual who cannot see through the hype, the rhetoric.

This term has caught the attention of schools, industry, and politicians who seek to improve learner outcomes. Have you ever heard someone say something like "teach them to think critically and they will be better able to succeed/work/learn"? On the other hand, have you ever heard someone say "teach them to think critically and they will be challenging parents/teachers/bosses"? People in general do not understand what critical thinking is. They get caught up in the word "critical" without unpacking their own emotional responses.

In September, 1993, United States Department of Education Secretary Richard Riley stated: "the vast majority of Americans do not know that they do not have the skills they need to earn a living in our increasingly technological society and international marketplace." The words of Secretary Riley provide a summation of the state of adult skills in the U.S. today. We all know this; it's old news now. While the results of the survey have been a point of debate since its release, the alarming point is that a large portion of the U.S. population not only do not have the literacy skills needed to negotiate the current and future job market, but are also limited in information literacy skills. To some, information literacy is another word for critical thinking, applying critical thinking to a vast amount of information that bombards the individual on a daily basis.

This segment is growing at the rate of at least 1.4 million per year--700,000 as dropouts and 700,000 as functionally illiterate graduates (Kim, 1992). Some even suggest that in Western culture nearly all adults can be categorized according to Piaget's concrete operations level, with approximately half of the adults never reaching the abstract operations level.

These findings are concerning to adult educators because we are charged with helping learners to navigate a sea of policies and procedures, from rental agreements to welfare-to-work plans. With the myriad of doctors that I was sent to, and daily phone calls with workman's comp, the generalizable critical thinking model - - those specific skills that are applied to different content areas - - helped me to ask questions to clarify, probe, reframe, and keep at it until either my husband or myself could make an assessment, and therefore, an informed decision regarding my care.

Models of Critical Thinking

There are different schools of thought about what critical thinking looks like. One model holds that critical thinking is a higher order process parallel to problem solving and metacognition. Another model has critical thinking as an umbrella covering a number of processes including problem solving, higher order thinking, and metacognition. John Chaffee, Ph.D., describes thinking critically as "our active, purposeful, and organized efforts to make sense of our world by carefully examining our thinking and the thinking of others in order to clarify and improve our understanding." This involves thinking for ourselves, being receptive to new ideas, supporting our viewpoints with reasons and evidence, discussing ideas in an organized way, and thinking actively. Richard Paul, Ph.D. at the Center for Critical Thinking describes 35 Dimensions of Critical Thought that include affective strategies, cognitive strategies - - micro-skills, and cognitive strategies - - macro-abilities. These dimensions are specific thinking skills that further clarify what critical thinkers do as they encounter information and life situations. (See the Center's website at http://www.sonoma.edu/cthink/K12/k12class/strat/stratall.nclk)

The model that I synthesized for my masters thesis still makes the most sense to me. Critical thinking is a triarchic structure -- three-faces of thinking that are vastly different yet work together to enable us to survive in the midst of change. These three paradigms, called absolutist, generalizable, and holistic, corresponds somewhat with the evolution of cognitive psychology. Regardless of the model, critical thinking refers to cognitive processes that allow a person to grapple with information in a meaningful way and to make new, meaningful insights into a situation or problem. Critical thinking involves thinking not only systematically, but also creatively, about a content area, problem, or situation.

Three-faced model

This model emerged from an extensive review of the critical thinking literature available in 1995. Each of these three distinctly different views of critical thinking, three different paradigms, correspond with instructional strategies that work and don't work. In fact, instructional strategies that work for one of the paradigms actually do not work for the others. The oldest description of critical thinking is termed Absolutist. This view holds that critical thinking is something that can be done only after a person has reached a level of expertise about a content area, such as auto mechanics or medicine. Only after reaching expertise, a process of education that can take years, is a person able to think critically. The second paradigm is called Generalizable, where critical thinking becomes a set of skills that an individual may learn and then use in any content area or life situation. From this view, critical thinking becomes a tool for transferring knowledge to new situations, including real life.

The third paradigm, the Holistic paradigm of critical thinking, is actually a blend of both absolutist and generalizable with a

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Critical Thinking Skills: An Interview with Dr. Richard Paul

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ability to work through difficulties in thinking in order to solve problems that have some inherent complexity in them. This would contrast with intellectual laziness, a trait which is virtually universal in students after a certain number of years of didicatic instruction. Students expect teachers to spoon feed them everything and as soon as learning encounters any difficulties there is a natural tendency to give up. That's a lack of intellectual perservance. Intellectual perservance is manifest in the ability to target and work through complexities. Fair-mindedness would be another trait of a good critical thinker. This is the ability to represent views other than your own accurately as opposed to the minds natural tendency to reject a view, and then represent it in its worse possible form in order to justify our rejection.

Q: Could you speak to the importance of reflective thought and how it relates to critical thinking?

RP: Notice that I defined critical thinking as thinking about thinking. That's exactly what the term reflective means. When you are reflective you're looking at your thinking in order to determine its quality presumably. We reflect not simply to see where the mind has been or how it's structuring things, but to determine its quality in order to improve it. Let's take the case of a reflective writer. You write a sentence and you reflect on the sentence. You reread the sentence and ask, "Is this what I want to say? Does this make the point I am trying to make? Does this sentence need further elaboration? Does it need an example, an illustration?" This is the thinking of a reflective writer.

Q: When learning new skills, we generally move through stages of development to perfect that skill. I assume this would be the same for critical thinking skills. If that is true, what are the stages of critical thinking?

RP: **The first stage, the unreflective thinker, is where we all begin.** We don't think about our thinking. We are controlled by our thinking; we don't control it. Our thinking may come from the media, from peer groups, from television, from newspapers or even misconceived experience. Whatever we are taking in and using in our thinking, we are not aware of so we are unreflective. **The second stage occurs when we undergo a crisis of recognition that our thinking is not what it could be.** We discover that our thinking often has problems associated with it. Our thinking becomes problematic and we recognize that there are things to be learned that we have not yet learned. **The third stage occurs when we begin to try to do something about the problems in our thinking.** We call this stage the beginning thinker. In a way that's misleading because it sounds like the person hasn't been thinking. What we mean is the beginning critical thinker: beginning to think about your thinking with a recognition that there are problems. The product of the third stage is the recognition that sooner or later you need to practice good habits of thought regularly. **So now you move to the next stage, the practicing stage.** You are beginning to develop regular habits of good thinking. You are far from an accomplished thinker, but you are practicing, and what you are practicing is improving the quality of your thinking and with practice eventually there is advancement. **The next stage is the advanced thinker;** although, there could be many stages of advancement in going from practicing to advanced. The difference between practicing to advanced is quite a relative distinction. **The final stage we recognize is that of master thinker.** The thinker in this stage is a person who whatever problem is presented, would tend to do good thinking about it. The master thinker asks good questions. They look for the right kind of data. They conceptualize data effectively. They test their thinking effectively. When they are able to do this in a kind of global sense across the various domains of their life, they are approaching mastery stage. This is contrasted with the ideal thinker which is purely hypothetical. No one actually achieves the ideal in full measure. The ideal thinker, you might say, doesn't exist. Thus all we can do is achieve some mastery. Of course becoming a master thinker does not mean thinking free of mistakes. Very often our best thinkers are those most aware of the weaknesses in their thinking rather than people who become confident that their thinking is at a high level. When I work with students using these stages, the further along they develop, the lower they place themselves. There is a tendency on the part of people who don't think very well to think that they think much better than they do. As they become more skilled, they recognize their own weakness more. You might say that this is somewhat akin to prejudice. The person who is least prejudiced is usually someone who is keenly aware of their prejudices. The person most prejudiced is the person who insists they are not prejudiced at all. So there's a kind of paradox here.

Q: In an earlier conversation you said, "Critical thinking of any kind is never universal in any individual; everyone is subject to episodes of undisciplined or irrational thought. Therefore, the development of critical thinking skills is a lifelong endeavor." Can you elaborate on this idea?

RP: First of all, whenever you think there are eight structures present. We don't really have time to examine each of these structures every time we think. Thus there are many possible mistakes that even the best thinker will make.

Q: What are the eight structures?

RP: The eight structures consist of the following. 1) Whenever you think, you think for a purpose or goal, something you are trying to achieve. 2) Whenever you think, there must be some quest you are trying to answer, some problem you are trying to solve, or some issue you are trying to resolve. 3) Whenever you think, if you have a question you are trying to answer, you need data, facts and experience. 4) Whenever you take data, facts and experience, you need to interpret it. 5) Whenever you interpret data, you use concepts or ideas. 6) Whenever you use concepts and ideas to interpret data, you make assumptions. 7) Whenever you think, coming to conclusions on the basis of data, concepts and assumptions, your thinking has implications and consequences. 8) Whenever you think, you think within a point of view. There are eight questions at least that you could ask of any thinking. What's the purpose? What's the question? What data do we have to work with? How are you interpreting these data? What are the key concepts or ideas we need to understand here? What are we taking for granted? What are the implications of proceeding as we are proceeding? How are we looking at this? Is there another way of looking at this? In my thinking even in the best

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of times. I'm not checking all of those all of the time. It is painfully easy to slip up in thinking. All you need to do is have an error occur in any one of those for a ripple effect to occur. If you are making a wrong assumption, that can throw you off. You can pose the wrong question. The important question is x but you are focused on question y. Your purpose may be off target a bit. You are aiming in a northerly direction and you need to aim in a southerly direction. You may need to reshift your goal. The concepts you are using may be flawed, insufficient or limiting. You may not notice the implications or consequences of the way you are proceeding. You may need to shift your whole way of looking at it. You may need to adopt a different perspective. Even though I and many others are trying to adopt and monitor our thinking with these eight structures in mind, we are all too aware that mistakes slip into them. We often catch our mistakes later or sometimes never at all. We look at any given structure for its clarity, accuracy, precision, and relevance. We can take the data and we express the data clearly. We express the data with a certain degree of precision. Are the data accurate and significant? How are we classifying the data? What are the implications of using these data rather than those data? So you can focus in on a structure and then bring fundamental intellectual standards to bear on that structure. The complexity here is that you should recognize that even the best thinkers are going to be making mistakes.

Q: What do you need to bring to the table before you can think critically? Can people learn critical thinking skills late in life?

RP: Everyone is a thinker. Everyone is using all of those eight structures that I mentioned and has been using them for years. All of us are capable of improving our thinking no matter where we are or what age we are. Whether we are motivated is another matter. I think that the main problem is not, if you will, in the hardware but in the software. In the case of the students, they've got the brain power, but most of them have developed so many bad habits of learning and they are using their bad habits of learning to try to learn. They keep falling into the vicious circle of trying to find some simple solution to internalizing content that they end up forgetting a lot of what they memorized, which puts them in a continual house of cards. They build it up and it collapses, and they build it again and it collapses again. This leads them to be discouraged, alienated and unmotivated. What we need to do, if we are learners, is to begin to discover the elements of thought and use them consciously in our thinking, that is become more reflective. Whenever we are doing something where we have a goal or objective, try to establish a habit of questioning our goals and objectives. What are we trying to accomplish and how are we going about it? Then whenever we are thinking (and we are thinking every day) we are trying to answer questions. Try to make the questions more explicit. What problems am I facing? Let me put those problems more precisely into words. Let me try to rephrase the problem in a number of different ways and pick out the best way to put it. How much information do I have about this problem or with respect to this goal? Where did I get my information? What is that information based on? Do I need new information? Now, how do we get the person to be motivated to ask these questions and to understand their importance? That's the problem. Even from the point of view of the learner, we're continually falling back into bad habits of thought which we have developed first. It's virtually impossible to be a human and not develop bad habits first because we think for many years before we are at the stage when we can apprehend our thinking and think about it in a truly conscious way.

Q: You spoke before about the importance of a teacher developing his or her own capacity to think critically so that he or she can appropriately model the behavior. Could you tell us how you would go about doing this?

RP: Let's go back to the stage theory for a minute. At what stage is the teacher? If the teacher is an unreflective thinker, that teacher will not be able to teach reflective thinking to the students. There is no guarantee that because somebody is teaching, he or she is a good thinker. If the person is a relatively good thinker, let's say that he or she is at the practicing or advanced stage, he or she will recognize that his or her own thinking is often flawed and will have lots of experiences that he or she can cite where he or she thought well and where she thought poorly. The teacher would then have the ammunition to use in the modeling process because her own experience tells her: here I thought well, here I thought poorly, here I came to a conclusion based on insufficient data and these negative consequences followed, here I gathered the appropriate amount of data and solved the problem effectively, here I lost some money because I looked at this investment from only one point of view. You have these insights into the problematic nature of your own thinking and are enabled to enrich the classroom with a variety of examples. You give the students an opening sense of what they need to discover about their own thinking to move in this direction. Ideally, we want teachers who are well aware of where they are in their own development and are committed to develop as critical thinkers. Then, there are three things you can do to help persons think better. The first thing you have to do is engage them in tasks that requires the thinking you are looking for. If teaching a class in investments, you might teach the students how to engage in investment opportunities, analyze such opportunities and evaluate the strengths and weakness of them. In other words, engage in the kinds of thinking that investors need to become successful in making investments. This is to be contrasted with simply getting the students to repeat back the items from a chapter or repeat back what you said in a lecture. Very few people engaged in tasks in the real world have to memorize what they work with. Most have to engage in some problem-solving or objective achieving. They have goals that they must achieve and they monitor the means by which they are trying to achieve them and self-evaluate in order to become more effective. In any case, we want to design activities in the classroom in which the students thinks in the manner that we want. But we can design an activity and the student may not have a clear idea or sense of what we are asking for. This brings in a second component and that is modeling the thinking we want. The teacher might say, "watch me as I think through this problem." The teacher thinks aloud in front of the student slowly spelling out each step along the way to some provisional answer. Doing, in essence, what we want the student to do. Third, we need to hold the students responsible to assess their thinking once they've done it. So if you imagine this as a diagram, there would be three circles. The first circle would be to engage your students in the thinking you want. The second circle would be model the thinking you want. And finally the third circle would be to hold your students responsible for the thinking that they do.

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Integrating Critical Thinking Skills into ABE Curriculum

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via class projects designed to develop class cohesiveness and reinforce all literacy concepts and skills learned during the quarter. Bloom defines synthesis as, "The ability to combine existing elements in order to create something original." We have discovered that "class projects" are a useful tool in giving our students practice in critical thinking - particularly synthesis and evaluation.

Descriptions of two class projects follow. They are simply examples. The project parameters used are limited only by imagination.

Project for Lower Levels (0-2.9 & 3.0-5.9)

Critical Thinking Levels Addressed: Synthesis and Evaluation
Project Objective: To explore a new way of using a non-academic skill you already possess.

Directions:
Part One: Choose something you currently do successfully. Expand on it.
Example: If you are a good cook, try a new, complicated recipe and serve it to guests.
Example: If you are a good choral singer, perform a solo at church or some other public gathering.

Part Two: Recite or write about your experience. Be sure to address the following:
A) What is your area of success?
B) How did you expand on your area of success?
C) How did you feel each step of the way?
D) What did you learn from doing this new thing?
E) How do you feel now that you have accomplished this new success?

Project for Upper Levels (6.0-8.9 & 9.0-PHS)

Critical Thinking Levels Addressed: Synthesis and Evaluation
Project Objective: To create a booklet titled, "What I'd Like to Tell My Children About Success".

Directions:
Part One: Every week, using a composition book or word processing file, make an entry relating to some aspect of success. Example writings might include...
A) Completing sentence starters: "I feel successful when..."
B) Interpreting famous quotes/sayings about success or reaching goals.
C) Descriptive analogies: "Success is like..."

Part Two: Proof and edit your entries. Give the finished booklet to a child or young person you are close to.

Literacy Action's holistic approach to addressing literacy competencies, particularly incorporating critical thinking skills at all levels of literacy is an important aspect of our curriculum. There has been an overwhelming positive response from both instructors and students regarding the expanded LAI curriculum. Three instructor feedback sessions were conducted throughout the 1997-1998 school year. Additionally, all students were surveyed about program and curriculum changes at the end of spring quarter 1998. Ninety-nine percent of students responded that they felt they were making progress toward their personal literacy goals. Ninety-eight percent reported that what they were learning seemed useful in their everyday life. It is the perception of our students and staff that activities in which adult basic learners are asked to think critically early in their program foster both academic and personal student success.

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Face to Face in a Nightmare: Critical Thinking and Reclaiming

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heavy dose of creative thinking. The purpose of such creative/critical thinking is for the individual to be able to negotiate the dangerous waters of daily existence and live a happy life. The absolutist influence is important because we surely hope that professionals in whom we entrust our health, our education, and our cars, are actually experts in their crafts. Expertise is the tacit knowledge, the knowing that we do without thinking about the processes. Expertise is the knowledge that I did not lose. (Bringing the tacit knowledge back into daily examination has been an interesting process.)

The generalizable face is the need for individuals to master the thinking skills, the problem solving steps, the analysis, the evaluation. All of the steps required to negotiate information on higher order levels. Creative thinking is the spark necessary to invent the new technologies, the new innovations, as well as the little daily solutions that make life so much more enjoyable. It is this face that I enjoyed every day before the accident, and embrace as my salvation.

Hazards of not thinking critically

Even though I was not thinking well in any content area and could not remember anything for more than a few seconds, the steps involved in critical thinking were so tacit that I was literally thinking on automatic pilot. I had always been very proactive, even aggressive, when it came to the health care of my family. My mother was a nurse, my sister a physician. I firmly believe in the benefits of holistic health practices, gathering and evaluating information before taking steps. On occasion I would trust the experts and usually paid dearly.

One time, when I had an asthma attack, the clinic physician prescribed a tablet and an inhaler that he was certain would help me. His experience informed him that it would help. My experience informed me that it wouldn't. Despite my objections that medications in the past had made the condition worse, he assured me that these were the standard treatments and that thousands of people use these medications. Trusting the expert instead of my experience, I started the medication the next morning and within a few hours I had passed out in toxic shock. It was my chiropractor -- a certified acupuncture practitioner -- who treated me and helped me to regain my health. In this case, not listening to my own conclusions and trusting the advice of the expert nearly killed me. So, I decided to trust my own experience and my own experience in the future.

Trained questioner

What is the question? What are the facts? I have continued to be a questioner. As a researcher, I have learned to be persistent when asking for sources, for clarification, for data, and general information to help me to distinguish between personal statements and verified facts. This persistent questioning demeanor did not seem to be appreciated by the managed care health professionals with whom I was forced to deal with following the accident. Also, being a reflective person, and a student of a highly metacognitive advisor in my graduate program, I was fully aware of exactly how I learned, how I processed information, and other aspects of the workings of my own cognition. Apparently this is unusual, because the nurses did not understand what I was talking about when I described changes in how I was perceiving my daily existence. My descriptions of the silence in my head must have seemed strange to them, since people who have voices in their heads usually have something else going on. With me, it's me talking to myself to get work done. One nurse even suggested that the new heart palpitations and unexplained flush were menopausal!

The value of this aspect of critical thinking was never more clear than when the managed care company referred me to their neurologist for assessment. After hopping up and down, walking on my toes, remembering three or four simple words, and squeezing his fingers, he told me that I needed to go to a psychiatrist to "get a little something to help me with the stress." I questioned that. To me the statement was reminiscent of the asthma medicine incident. At that point I did not have the MTBI diagnosis. I was still being shuffled from one doctor to another. It was hard to make a decision, but this one didn't sound right. I know the difference between mental illness--the domain of psychiatrists--and injury. Ten months later I learned that the recommended drugs are damaging to brain injury patients. My cognition would have been made even further reduced.

Cindy Goes Postal

Prior to the accident I knew how to look at information, situations, and make accurate decisions. I knew when decisions needed to be made and how to follow through. I followed the research model to organize information and to follow up with decisions. After the accident I struggled with sorting through the information. Lack of short term memory made decision making of all kinds very challenging. I relied on my husband to help me with decisions. My frustration tolerance was low while actual levels were high. Life is filled with daily decisions that make the difference between being victimized and being proactive. When I was finally able to take a look at the household bills 7 months after the accident, I realized that my injury was having financial repercussions. Bills were late so I had late fees. There were charges for purchases that I made from telemarketers because I didn't make good decisions. When I came to realize that there were significant problems, I became unglued. Knowing decision making processes and being able to use them efficiently are two different places to be. Decision making requires sorting and analyzing information, two skills that I did not have. So I transferred decision making to others, and drew from my old knowledge to devise a plan to teach myself these higher order skills.

Sorting

Taking my rehab into my own hands, I journeyed back into my years as a teacher of young children to find ideas to teach myself to sort. Every day everyone has to sort something, whether it's deciding what to do with the mail or folding laundry. I took myself to the grocery store (actually, since I don't drive much anymore, my husband and I went to the store) and I started to sack the groceries. It was very difficult for many months. Putting cold foods together. Not putting vegetables in with the kitty litter or potting soil. Frozen goods in plastic bags. Difficult decisions. Each little success came in the form of a filled bag in the grocery cart. I rewarded myself in

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Face to Face in a Nightmare: Critical Thinking and Reclaiming

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some way with each success. Being intrinsically motivated by nature, it was enough to know that I made a step by myself. Extrinsic reward was nice too. This is just one example of identifying a deficit (problem finding) and drawing from old knowledge as a teacher to devise a plan (predicting barriers and visualizing success) and take the action (the assertive habit from days of old).

Does this sound familiar? Does this sound like any learners in your programs? Now, imagine that you have a learner who presents with these challenges and communicates in a disorderly fashion, but who is highly metacognitive. This is a fascinating situation to be in. To have the old knowledge intact--the knowledge of literacy program design, instruction, teacher training, adult learning theory, teaching practice--but overlaid with new challenges. At the present time I negotiate information as a person with learning challenges and communication difficulties, but with a solid base of literacy knowledge, research knowledge, critical thinking knowledge, and learning theory and practice knowledge.

The journey continues. I have not recovered in the physiological sense, but I have relearned. I am able to work with a keyboard in a semiproficient manner now. I can have a fair conversation without making others confused. Each word was individually reclaimed. Each memory was reconstructed. Each communication skill has been stumbled over and practiced again and again. By knowing how to think critically about just being, I could access old knowledge, ask necessary questions, and gather information to take little steps forward. The circular conversation continues, and I urge each and every reader to take to heart the wondrous working of your mind and take the time to observe how you learn, how you wrap your brain around information. Understand that for some of your learners, it will be by teaching them how to structure information, how to think ABOUT information, indeed how to sort, that will provide lasting skills to survive and enjoy life.

Lifelong Learning Network
Center for Rehabilitation Technology
Georgia Institute of Technology
Atlanta, Georgia 30332-0156

Sixth Annual EAGLE (Exceptional Adult Georgian's in Literacy Education) Awards Program

January 20 - 21, 1999 ***Crowne Plaza Hotel, Macon, GA***

The EAGLE program is designed to recognize outstanding students enrolled and participating in literacy classes throughout Georgia. For more information call: (404)679-1625.

International Conference on Women & Literacy

January 24 - 26, 1999 ***Atlanta, GA***

The International Conference on Women and Literacy will bring together a diverse constituency of researchers, practioners, learners, and policy makers. This constituency is being brought together to pose problems and develop an understanding of the linkages between women's lives and their literacies. Issues for discussion will include welfare reform, domestic violence, health, and ethnicity as they relate to women and literacy.

For more information contact Sandy Vaughn at the Center for the Study of Adult Literacy at Georgia State University at (404)651-1400 or email <alcsvv@langate.gsu.edu>.

Technology and Adult Basic Education: The Changing Role of Teachers --1999 Winter Institute--

January 27 - 29, 1999 ***Atlanta, GA***

As the use of technology proliferates in the adult basic education classroom, the role of the teacher may be expected to change. Some suggest that employing technology may require a shift from more traditional didactic teaching to a more facilitative approach. The 1999 Winter Institute will provide a forum where the ramifications of technology and adult basic education will be explored.

For more information contact Barbara Christopher or Mark Johnson at Georgia Tech's Lifelong Learning Network at (404) 894-0561 or (800) 428-7323 or via email at <barbara.christopher@arch.gatech.edu> or <mark.johnson@arch.gatech.edu>.

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